

Selby
What is claimed is:

1. A semiconductor device manufacturing method, comprising:

a first step of forming, by a thermal chemical vapor deposition method, a silicon nitride film on an object disposed in a reaction container, with bis tertiary butyl amino silane and NH₃ flowing into the reaction container, and

a second step of removing silicon nitride formed in said reaction container, with NF₃ gas flowing into said reaction container.

2. A semiconductor device manufacturing method as recited in Claim 1, further comprising said first step after said second step.

3. A semiconductor device manufacturing method as recited in Claim 1, wherein

after repeating said first step predetermined times, said silicon nitride formed in said reaction container is removed, with NF₃ gas flowing into said reaction container.

4. A semiconductor device manufacturing method as recited in Claim 1, wherein

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before said silicon nitride formed in said reaction container has a predetermined thickness, said silicon nitride formed in said reaction container is removed, with NF₃ gas flowing into said reaction container.

5. A semiconductor device manufacturing method as recited in Claim 1, wherein

before said silicon nitride formed in said reaction container has such a thickness as to generate particles on said object, said silicon nitride formed in said reaction container is removed, with NF₃ gas flowing into said reaction container.

6. A semiconductor device manufacturing method as recited in claim 1, wherein

said reaction container itself is made of quartz and/or a member made of quartz is used in said reaction container, and

before a thickness of said silicon nitride formed on said quartz is increased to such an extent as to generate particles on said object, NF₃ gas is allowed to flow into said reaction container to remove said silicon nitride formed on said quartz.

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7. A semiconductor device manufacturing method as recited in claim 6, wherein

said second step is carried out in a state where a pressure in said reaction container is set to 10 Torr or higher.

8. A semiconductor device manufacturing method as recited in claim 1, further comprising a step of purging said reaction container using NH₃ gas at least one of before and after said first step.

9. A semiconductor manufacturing apparatus comprising a reaction container, wherein

a silicon nitride film is formed, by a thermal chemical vapor deposition method, on an object disposed in said reaction container, with bis tertiary butyl amino silane and NH₃ flowing into the reaction container, and

silicon nitride formed in said reaction container is removed, with NF₃ gas flowing into said reaction container.

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